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## Glossary

**acre-foot.** The volume of water sufficient to cover one acre of land to a depth of 1 foot. Equals 43,560 cubic feet or approximately 325,851 U.S. gallons.

**Albedo.** The amount of solar energy (shortwave radiation) reflected from the Earth back into space. It is a measure of the reflectivity of the earth's surface.

**Anhydrite.** Relatively common sedimentary mineral that forms massive rock layers and develops from the dewatering of gypsum.

**Anticline.** A geologic structure in which rocks are folded so the rock layers are convex, forming a dome, with the younger rocks on the outside.

**Applicant–committed Environmental Protection Measures.** Actions agreed to in advance of project initiation by the proponent; designed to protect resources.

**Aquifer.** A body of rock that is sufficiently permeable to conduct groundwater and to yield economically significant quantities of water to wells and springs.

**Aquitard.** A bed of low permeability adjacent to an aquifer that may store groundwater, although it does not yield water readily.

**Aridisols.** Soils that occur under arid climates, where evaporation greatly exceeds precipitation. They are characterized by an accumulation of carbonates and other salts.

**Big Game.** Native ungulate wildlife species that are hunted, such as deer and pronghorn antelope.

**Biological Soil Crust.** Community of non-vascular primary producers that occur as a "crust" on the surface of soils; made up of a mixture of algae, lichens, mosses, and cyanobacteria (bluegreen algae).

**Breccia.** A deposit consisting of fragmented rock materials caused by the collapse of underground voids due to dissolution of evaporite layers.

**Clastic rocks.** Sedimentary rocks composed of particles weathered from any type of pre-existing rocks and minerals.

**Convergence (mining).** Closure of the mined area through subsidence

**Cumulative Effect.** The impact that results from identified actions when they are added to other past, present, and reasonably foreseeable future actions regardless of who undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

**Diagenetic (geology).** The process of chemical and physical change in deposited sediment during its conversion to rock.

**Drawdown Contour.** A line derived from water modeling that depicts extent of lowering of the water level after pumping compared to its previous level.

**Drawdown.** The lowering of the water level in a well, spring, water body, or water table as a result of water withdrawal from an aquifer.

**Elastoplastic rock.** Massive, homogeneous, and relatively elastic rock with load-deformation characteristics that allow the rock to deviate significantly from a straight line without fracturing.

**Ephemeral stream.** A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no continuous supply from melting snow or other source, and its channel is above the water table at all times.

**Erosion.** Detachment and movement of soil or rock fragments by water, wind, ice, or gravity. Wearing away of the land surface by running water, wind, ice, or other geologic agents, including such processes as gravitational creep.

**Escarpment.** A long, precipitous, cliff-like ridge of land or rock, commonly formed by faulting or fracturing of the underlying bedrock.

**Evaporite (geology).** Any of a variety of minerals found in the sedimentary deposit of soluble salts that result from the evaporation of water.

**Facies (geology).** A rock or stratified body with specific characteristics such as appearance or composition.

**Forage.** The plant material actually consumed by or available to grazing animals.

**Fugitive Dust.** A non-point source of air pollution, such as from unpaved roads, agricultural croplands, and construction sites.

**Granitic (geology).** A common, coarse-grained, light-colored, hard igneous rock consisting chiefly of quartz, orthoclase or microcline, and mica.

**Groundwater.** Subsurface water that is in the zone of saturation. The top surface of the groundwater is the "water table." Source of water for wells, seepage, springs.

**Habitat Fragmentation.** The division of large contiguous blocks of wildlife habitat into isolated smaller parcels separated by distances great enough to discourage wildlife movement between parcels.

**Habitat.** An environment that meets a specific set of physical, biological, temporal, or spatial characteristics that satisfy the requirements of a plant or animal species or group of species for part or all of their life cycle.

**Hypersaline.** Extremely salty, having much more salt than normal seawater or brine water.

**Karst.** Terrain with distinctive, often rolling, landforms created from the dissolution of soluble rocks, principally limestone and dolomite. It is characterized by springs, caves, and sinkholes that are often directly connected to aquifers.

**Langbeinite.** A potassium magnesium sulfate mineral with formula  $K_2Mg_2(SO_4)_3$ .

**Metamorphic (geology).** Rock that has been changed or transformed from its original form by excessive heat or pressure.

**pH.** A measure of the acidity or alkalinity of a solution. The pH scale ranges from 0 to 14, with 7 used for neutral solutions, increasing with increasing alkalinity and decreasing with increasing acidity.

**Physiography.** The physical geography of an area, characterized by similar landforms and geology.

**Polyhalite.** A hydrated potassium-calcium-magnesium-sulfate salt with the formula  $K_2Ca_2Mg(SO_4)_4 \cdot 2(H_2O)$  that has less solubility in water than other evaporite minerals. It is thought to have formed as a replacement mineral from the dissolution of anhydrite by brine solutions.

**Potash.** Common name for various mined and manufactured salts that contain potassium in water-soluble form.

**Potentiometric surface.** The level to which groundwater would rise if not confined; equivalent to the top of a water table in an unconfined aquifer.

**Sedimentary rocks.** Rocks formed by accumulation and cementation of minerals transported by wind or water, or chemically precipitated.

**Subsidence.** The gradual settling or sudden sinking of the Earth's surface caused by the subsurface movement of bedrock. Subsidence can occur naturally or can be man-made due to conditions including dissolution of subsurface strata, removal of bedrock by underground mining, withdrawal of subsurface fluids, thawing, and natural consolidation of subsurface materials.

**Sylvite.** Potassium chloride in natural mineral form. It forms crystals in the isometric system very similar to normal rock salt, halite.

**Talus.** The loose rock created by physical weathering, typically found on a steep mountainside or at the base of a cliff or slope.

**Topography.** The form and structure of the surface of land.

**Volcanic (geology).** Relating to or produced by volcanoes.

**Vug.** A small cavity in a rock or vein, often with a mineral lining of different composition from that of the surrounding rock.

**Watershed.** The area of land where all of the water that drains from it flows into the same place.

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## **Appendix A**

### **Lease Stipulations and Conditions of Approval for Secretary's Potash Area**



# POTASH LEASE STIPULATIONS AND POTENTIAL CONDITIONS OF APPROVAL

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# **1 Existing Potash Lease Stipulations**

The following lease stipulations are attached to the potash leases owned by Intrepid and associated with this project. Not all stipulations are attached to all leases.

## **1.1 Special Stipulations**

These stipulations are a minimum requirement for general lease operations. More restrictive stipulations may be required for specific projects.

### **1.1.1 Damage Indemnity**

The lessee shall agree and stipulate that the Federal Government, the Department of the Interior, and the Bureau of Land Management and its representatives shall not be responsible for damage or injury to persons and property which may occur during the permitted use period or as a result of such use.

### **1.1.2 Compliance with Laws and Regulations**

The lessee shall comply with all applicable Federal, State and local laws and regulations existing or hereafter enacted or promulgated during the term of this action.

### **1.1.3 Oil and Gas Production**

Operations shall not be conducted which in the opinion of the authorized officer would constitute a hazard to oil and gas production or that would unreasonably interfere with the orderly development and production under any oil and gas lease issued for the same lands.

### **1.1.4 Pollution Removal**

If, during any phase of the construction or operation of the lease, any pollutant or hazardous material should be discharged by the operator or his representative impacting Federal lands, the control and total removal, disposal, and cleanup of such pollutant or hazardous material, wherever found, shall be the responsibility of lessee, regardless of fault. Upon failure of lessee to control, dispose of, or cleanup such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control the cleanup, the discharge, and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the lessee. Such action by the Authorized Officer shall not relieve the lessee of any responsibility as provided herein.

### **1.1.5 Wood and Plant Removal**

Removal of fuel wood and live plants from public lands are not permitted unless approved by the authorized officer.

### **1.1.6 Mineral Removal**

Removal of mineral materials such as sand, gravel, caliche, or building stone is not allowed unless authorized by a current sales contract. No new caliche pits or other material pits on federal lands shall be allowed without the approval of the Authorized Officer. Mineral materials

removed from Federal lands is by permit only. A permit shall be purchased prior to mineral material removal.

#### **1.1.7 Antiquities**

The collection, excavation, removal, damage to or alteration of any antiquities, including Indian artifacts and arrowheads is prohibited by the Archeological Resources Protection Act (16 USC 470aa-4701l). The lessee shall be responsible for ensuring that people employed by the lessee or under contract to the lessee shall abide by this law.

#### **1.1.8 Cultural Resources**

Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the lessee or any person working on the lessee's behalf, on Federal land shall be immediately reported to the authorized officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. The authorized officer shall determine the appropriate actions necessary in order to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any measures necessary to mitigate the site as determined by the authorized officer With consultation with the lessee.

#### **1.1.9 Cultural Survey**

A cultural survey shall be conducted by an archeologist approved by the BLM, prior to any construction activities on lands not previously surveyed.

#### **1.1.10 New Construction**

The lessee shall obtain prior written approval from the BLM of any construction not authorized in a previously approved plan. Notification to the BLM of the activity shall be in the form of a written mining plan modification.

#### **1.1.11 Fences**

If a fence is crossed during lease operations, to prevent slacking of fence wire, the lessee will brace and tie-off each existing fence to be crossed before cutting. During construction, the opening shall be protected to prevent the escape of livestock. Fences which have been cut during construction will be restored by the lessee to a condition which is equal to or better than the original. Cattle guards and adjacent gates which are of a suitable width will also be installed in any fence where a road created during construction is to be regularly traveled.

#### **1.1.12 Gates**

Gates or cattle guards on public lands shall not be locked or closed to public use by the lessee. Gates will be kept closed at all times unless the grazing allottee requests them to be left open.

#### **1.1.13 Surface Owner Notification**

Prior to any construction, the lessee shall notify the grazing allottee or the surface owner, in the case of private ownership, of the activity. Abandonment stipulations will coincide with surface owner agreement.

**1.1.14 Scattering**

Vegetation, soil and rocks left as a result of construction or maintenance activity will be randomly scattered in the vicinity and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer.

**1.1.15 Blading**

Clearing and blading of roads and pads will be held to a minimum unless approved by the authorized officer.

**1.1.16 Pits**

At the conclusion of construction activities requiring the excavation of pits on the surface of Federal lands, the pits will be filled with soil such that after compaction the pit is at ground level.

**1.1.17 Trash**

No landfills for the disposal of any waste shall be allowed. All trash shall be hauled to an approved sanitary landfill or dump site. Any other methods of disposal shall first be approved by the Authorized Officer.

**1.1.18 Concrete**

No excess or waste concrete shall be dumped on Federal lands. If concrete is accidentally spilled, it will be removed and disposed of properly.

**1.1.19 Noxious Weeds**

The operation of the lease may not result in the establishment of noxious weeds as defined by the Carlsbad Field Office. If any lease action is responsible for the establishment of any noxious weeds on the leased or surrounding lands, the lessee will be responsible for their removal at the lessees expense. The current noxious weeds defined by the Carlsbad Field Office are: Malta Starthistle, African Rue, Scotch Thistle, Saltcedar, or Rayless Goldenrod. This list may change at any time.

**1.1.20 Painting**

Any structures erected at a location away from the main plant site, as determined by the BLM shall be painted a color which blends in with the natural landscape. The color shall be one that is approved by the BLM.

**1.2 Road Construction Stipulations****1.2.1 Road Width and Grade**

The road will have a driving surface no greater than 12 feet. The maximum grade of the road at any point will be no more than 10 percent. Minimum road construction techniques are recommended.

**1.2.2 Surface Disturbance Width**

The maximum width of surface disturbance resulting from road construction will be 30 feet. Minimum road techniques are recommended.

### **1.2.3 Cattle guards**

Where used, all cattle guard grids and foundation designs and construction shall meet the American Association of State Highway and Transportation Officials (AASHTO) Load Rating H-20, although AASHTO U-80 rated grids shall be required where heavy loads (exceeding H-20 loading), are anticipated (see BLM standard drawings for cattle guards). Cattle guard grid length shall not be less than 8 feet and width of not less than 14 feet. A wire gate (1 6-foot minimum width) will be provided on one side of the cattle guard unless requested otherwise by the surface user.

## **1.3 Reclamation**

Stipulations required by the Authorized Officer on specific actions may differ from the following general guidelines.

### **1.3.1 Core Hole Reclamation**

- A. All the core holes shall be plugged from bottom to top with cement to protect water bearing aquifers.
- B. A 4-inch pipe marker will be set extending 5 feet above ground level and will have the location and lessee's name appropriately marked on the pipe.
- C. Upon abandonment of a core hole, a lithology log shall be submitted with assays and mineral balances when warranted.

### **1.3.2 Road and Site Reclamation**

- A. Any new roads or pads constructed during lease operation will be ripped and seeded, and any drilling pads constructed will be ripped and seeded.
- B. Any areas where vehicles have been driven across open country will have three tee posts with wire stretched between them, erected across the access to the disturbance in order to restrict further vehicular use.
- C. Any land disturbed during construction will be seeded to the specifications below.
- D. A berm will be constructed across the entrance to any road reclaimed with a minimum height of 3 feet and a length sufficient to prohibit or discourage vehicular travel.
- E. The surface allottee can request that a road be allowed to remain, if approved by the Authorized Officer.

### **1.3.3 Facility Reclamation**

Any surface structure erected during lease operation shall be removed and disposed of in a proper manner according to Federal, State and County laws and regulations. Any concrete spilled on the Public Lands shall be removed and disposed of properly.

### **1.3.4 Hazardous Waste Removal**

Any hazardous wastes spilled or otherwise used on the site will be removed and disposed of by a method approved by the authorized officer at the expense of the lessee.



**1.3.5 Reseeding**

If after one growing season the vegetation has not taken hold, re-seeding will be required as in the steps below.

**1.3.5.1 Seeding Techniques**

Seeds shall be drilled to a proper depth to insure good coverage and germination. The seed mixture shall be evenly and uniformly planted over the disturbed area. If drilling is not possible, seeds shall be broadcast and the area raked or dragged to cover the seed.

**1.3.5.2 Seed Mixture**

A certified "Weed Free" seed mixture will be used for reclamation. The suggested seed mixtures can be found in Section 3 of this appendix. The seed mixture may be changed with the approval of the authorized officer. Species are to be planted in pounds of pure live seed per acre.

**1.3.5.3 Soil Preparation**

A granular 16-12-12 fertilizer, or better, will be required at the rate of 200 lbs. per acre.

Fertilizer requirements may be modified prior to the performance of reclamation upon approval of the Authorized Officer.

Water shall be applied directly after planting, irrigated a minimum of three inches into the soil in order to provide adequate amounts of moisture, and to help embed the seeds. Seeding prior to the fall rainy season is preferable.

**2 Pending Conditions of Approval**

These COAs will be applied to the APDs and ROWs associated with this project as needed and as determined by BLM resource specialists)

**2.1 General****2.1.1 Damage Indemnity**

The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

**2.1.2 Toxic Substances Control Act Compliance**

The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be

furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

### **2.1.3 Hazardous Waste Indemnity**

The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

### **2.1.4 Fences**

The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer. The holder will make a documented good-faith effort to contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence.

### **2.1.5 Scattering**

Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. A berm will be left over the ditch line to allow for settling back to grade.

### **2.1.6 Erosion Control Structures**

In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

### **2.1.7 Reseeding**

The holder will reseed. Seeding will be done according to the attached seeding requirements.

### **2.1.8 Painting Requirements**

All permanent surface production facilities, including the well-drive control system, treatment, storage, power (except specifically approved electrical transmission lines and poles, or other permanent above-ground facilities not otherwise specifically subject to safety coloring requirements), shall be painted by the holder to blend with the dominant natural color of the surrounding landscape. The paint used shall be one of the "Standard Environmental Colors"

designated by the Rocky Mountain Five-State Interagency Committee, and shall be a flat, non-reflective finish. Any exception to this Painting Requirement must be approved by the BLM Authorized Officer in writing prior to implementation.

## **2.1.9 Cultural Resources**

Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

### **2.1.10 Native American Graves Protection and Repatriation Act**

The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes.

### **2.1.11 Pollution Removal**

If, during any phase of the construction, operation, maintenance, or termination of the [PROJECT], any oil or other pollutant should be discharged, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of the Holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages to Federal lands resulting therefrom, the Authorized Officer may take such measures as deemed necessary to control and cleanup the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the Holder. Such action by the Authorized Officer shall not relieve the Holder of any liability or responsibility as provided herein.

## **2.2 Pipelines**

### **2.2.1 All Pipelines**

#### **2.2.1.1 Damage Liability**

The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury

to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

- Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.
- Activities of other parties including, but not limited to:
  1. Land clearing.
  2. Earth-disturbing and earth-moving work.
  3. Blasting.
  4. Vandalism and sabotage.
- Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars (\$1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

### **2.2.1.2 Right-Of-Way**

All construction and maintenance activity will be confined to the authorized right-of-way width of 25 feet. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

All construction and maintenance activity will be confined to the authorized right-of-way.

### **2.2.1.3 Signage**

The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

## **2.2.2 Buried Pipeline**

### **2.2.2.1 Cover**

The pipeline will be buried with a minimum cover of 24 inches between the top of the pipe and ground level.

### **2.2.2.2 Blading**

Blading of all vegetation will be allowed. Blading is defined as the complete removal of brush and ground vegetation. Clearing of brush species will be allowed. Clearing defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface. In areas where blading and/or clearing is allowed, maximum width of these operations will not exceed 35 feet.

### **2.2.3 Surface Pipeline**

#### **2.2.3.1 *No Blading W/O Approval***

No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.

#### **2.2.3.2 *Minimize Suspension***

The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky or dune areas, the pipeline will be "snaked" around hummocks and dunes rather than suspended across these features.

#### **2.2.3.3 *Crossing Burial***

The pipeline shall be buried with a minimum of 24 inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

## **2.3 Cave/Karst**

### **2.3.1 Karst Features**

The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction and no further construction will be done at that point until clearance has been issued by the Authorized Officer. Special restoration stipulations or a realignment may be required at such intersections, if any. The project will be routed around sinkholes and other karst features when practical. Turnout ditches and drainage leadoffs will not be constructed in such a manner as to increase or decrease the natural flow of water into or out of cave or karst features.

### **2.3.2 Surface Disturbance Buffer**

Surface disturbance will not be allowed within up to 200 meters of known cave entrances, passages or aspects of significant caves, or significant karst features. Waiver of this requirement will be considered for projects that enhance or protect renewable natural resource values, or when an approved plan of operations ensures the protection of cave and karst resources.

### **2.3.3 Cave Protection**

To mitigate or lessen the probability of impacts associated with the drilling wells in karst areas, the guidelines listed in Appendix 3, Practices for Oil and Gas Drilling and Production in Cave and Karst Areas, as approved in the Carlsbad Resource Management Plan Amendment of 1997, page AP 3-4 through AP 3-7 will be applied as appropriate.

### **2.3.4 Protection Protocols**

BLM maintains up to date locations and surveys of known cave and karst features. Projects will be located away from these features whenever possible. Drilling pads, roads, utilities, pipelines and flowlines will be routed around cave and karst features at an adequate distance to mitigate

adverse impacts. Wellbore engineering plans will incorporate required cave and aquifer protection protocols.

### **2.3.5 Aquifer Recharge**

Highly sensitive cave and karst areas with critical freshwater aquifer recharge concerns may have a number of special surface and subsurface planning and construction requirements based upon the risk of adverse impacts created by a specific location or process.

### **2.3.6 Cave/Karst Construction Mitigation**

In order to mitigate the impacts from construction activities on cave and karst resources, the following Conditions of Approval will apply to this APD:

- In the event that any underground voids are encountered during construction activities, construction activities will be halted and the BLM will be notified immediately.
- Delayed Blasting  
OR  
No Blasting to prevent geologic structure instabilities.
- Pad Berming to minimize effects of any spilled contaminants.

### **2.3.7 Cave/Karst Drilling Mitigation**

Federal regulations and standard Conditions of Approval applied to all APDs require that adequate measures are taken to prevent contamination to the environment. Due to the extreme sensitivity of the cave and karst resources in this project area, the following additional Conditions of Approval will be added to this APD.

To prevent cave and karst resource contamination the following will be required:

- Closed Mud System with Buried Cuttings Pit/Drying Area.  
OR  
Closed Mud System with Cuttings Pit/Drying Area and Cuttings Removed.  
OR  
Closed Mud System Using Steel Tanks with All Fluids and Cuttings Hauled Off.
- Rotary drilling with fresh water where cave or karst features are expected to prevent contamination of freshwater aquifers.
- Directional Drilling allowed after drilling vertically at least 100 feet below the cave occurrence zone to prevent additional impacts resulting from directional drilling.
- Lost Circulation zones logged and reported in the drilling report so BLM can assess the situation and work with the operator on corrective actions.
- Additional drilling, casing, and cementing procedures to protect cave zones and fresh water aquifers.

## 2.4 Roads

### 2.4.1 Invasive Plant Species

The Holder shall ensure that the entire right-of-way, including the driving surface, ditching and drainage control structures, road verges and any construction sites or zones, will be kept free of the following plant species: Malta starthistle, African rue, Scotch thistle and salt cedar.

### 2.4.2 Road Width and Grade

The road will have a driving surface of 14 feet (all roads shall have a minimum driving surface of 12 feet, unless local conditions dictate a different width). The maximum grade is 10 percent. Maximum width of surface disturbance from construction will be 30 feet.

### 2.4.3 Crowning and Ditching

Crowning with materials on site and ditching on one side of the road on the uphill side will be required. The road cross-section will conform to the cross section diagrams in Figure 1. If conditions dictate, ditching may be required for both sides of the road; if local conditions permit, a flat-bladed road may be considered. The crown shall have a grade of approximately 2% (i.e., 1" crown on a 12' wide road).

### 2.4.4 Drainage

Drainage control shall be ensured over the entire road through the use of borrow ditches, out-sloping, in-sloping, natural rolling topography, lead-off (turnout) ditches, culverts, and/or drainage dips.

#### 2.4.4.1 Lead-Off Ditches

All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval for lead-off ditches shall be determined according to the following table, but may be amended depending upon existing soil types and centerline road slope (in %):

[INSERT SPACING INTERVAL TABLE]

A typical lead-off ditch has a minimum depth of 1 foot below and a berm 6 inches above natural ground level. The berm will be on the down-slope side of the lead-off ditch. The ditch end will tie into vegetation whenever possible.

#### 2.4.4.2 Culvert Pipes

Culvert pipes shall be used for cross drains where drainage dips or low water crossings are not feasible. The minimum culvert diameter must be 18 inches. Any culvert pipe installed shall be of sufficient diameter to pass the anticipated flow of water. Culvert location and required diameter are shown on the attached map (Further details can be obtained from the Pecos District Office or the appropriate Field Office).

#### 2.4.4.3 Drainage Dips

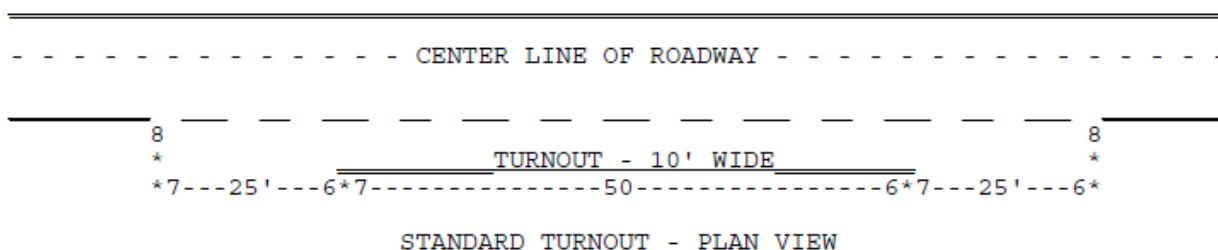
On road slopes exceeding 2%, drainage dips shall drain water into an adjacent lead-off ditch. Drainage dip location and spacing shall be determined by the formula:

$$\text{Spacing interval} = \frac{400'}{\text{road slope in \%}} + 100'$$

Example: 4% slope: spacing interval =  $400 + 100 = 200$  feet

#### 2.4.5 Turnouts

Unless otherwise approved by the Authorized Officer, vehicle turnouts will be required. Turnouts will be located at 2000-foot intervals, or the turnouts will be intervisible, whichever is less. Turnouts will conform to the following diagram:



#### 2.4.6 Surfacing

Surfacing of the road or those portions identified on the attached map may, at the direction of the Authorized Officer, be required, if necessary, to maintain traffic within the right-of-way with caliche, gravel, or other surfacing material which shall be approved by the Authorized Officer. When surfacing is required, surfacing materials will be compacted to a minimum thickness of six inches with caliche material. The width of surfacing shall be no less than the driving surface. Prior to using any mineral materials from an existing or proposed Federal source, authorization must be obtained from the Authorized Officer.

A sales contract for the removal of mineral materials (caliche, sand, gravel, fill dirt, etc.) from an authorized pit, site, or on location must be obtained from the BLM prior to using any such mineral material from public lands. Contact the BLM solid minerals staff for the various options to purchase mineral material.

#### 2.4.7 Cattleguard Requirements

Where used, all cattleguard grids and foundation designs and construction shall meet the American Association of State Highway and Transportation Officials (AASHTO) Load Rating H-20, although AASHTO U-80 rated grids shall be required where heavy loads (exceeding H-20 loading), are anticipated (See BLM standard drawings for cattleguards). Cattleguard grid length shall not be less than 8 feet and width of not less than 14 feet. A wire gate (16-foot minimum width) will be provided on one side of the cattleguard unless requested otherwise by the surface user.



#### **2.4.8 Maintenance**

The holder shall maintain the road in a safe, usable condition. A maintenance program shall include, but not be limited to blading, ditching, culvert installation, culvert cleaning, drainage installation, cattleguard maintenance, and surfacing.

#### **2.4.9 Public Access**

Public access along this road will not be restricted by the holder without specific written approval being granted by the Authorized Officer. Gates or cattleguards on public lands will not be locked or closed to public use unless closure is specifically determined to be necessary and is authorized in writing by the Authorized Officer.

### **2.5 Power Lines**

#### **2.5.1 All Power Lines**

##### ***2.5.1.1 Blading of Powerline ROWs***

There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

##### ***2.5.1.2 Power Line Signage***

The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

##### ***2.5.1.3 Abandonment***

Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

##### ***2.5.1.4 Removal of Surface Structures***

All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

##### ***2.5.1.5 Noxious Weeds***

The holder shall insure that the equipment and or vehicles that will be used to construct, maintain and administer the access roads, well pad, and resulting well are not polluted with invasive and noxious weed seeds. Transporting of invasive and noxious weed seeds could occur if the equipment and vehicles were previously used in noxious weed infested areas. In order to prevent the spread of noxious weeds, the Authorized Officer shall require that the equipment and vehicles be cleaned with either high pressure water or air prior to construction, maintenance and administration of the access roads, well pad, and resulting well. The holder is

responsible for consultation with the authorized officer and/or local authorities for acceptable weed control methods, which include following EPA and BLM requirements and policy.

#### **2.5.1.6 Waste Disposal**

The holder shall be responsible for maintaining the site in a sanitary condition at all times; waste materials shall be disposed of promptly at an appropriate waste disposal site. "Waste" means all discarded matter including, but not limited to human waste, trash, garbage, refuse, oil drums, petroleum products, ashes and equipment.

### **2.5.2 Overhead Power Lines**

#### **2.5.2.1 Raptor Protection**

Powerlines shall be constructed in accordance to standards outlined in "Suggested Practices for Raptor Protection on Powerlines," Raptor Research Foundation, Inc., 1981. The holder shall assume the burden and expense of proving that pole designs not shown in the above publication are "raptor safe." Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

#### **2.5.2.2 Special Power Line Stipulations**

Limit all disturbance to authorized width of approved access road.

For reclamation remove poles, lines, transformer, etc. and dispose of properly.

Fill in any holes from the poles removed.

### **2.5.3 Buried Power Lines**

#### **2.5.3.1 Limits**

The holder shall conduct all activities associated with the construction, operation and termination of the power line within the authorized limits.

#### **2.5.3.2 Construction Trenches**

Construction trenches left open overnight shall be covered. Covers shall be secured in place and shall be strong enough to prevent livestock or wildlife from falling through and into a hole.

#### **2.5.3.3 Excavated Soil**

The holder shall evenly spread the excess soil excavated from trench in the immediate vicinity of the trench structure.

#### **2.5.3.4 Special Buried Powerline Stipulations**

The construction of this project would consist of digging a trench to a depth of at least 38 inches, then installing the power line and covering with backfill dirt. After completing construction of the buried power line, the line shall be marked with underground power line warning signs at least every ¼ mile.

## **2.6 Reclamation**

### **2.6.1 Interim Reclamation**

#### **2.6.1.1 *Interim Reclamation***

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

#### **2.6.1.2 *Reduction Strategy***

Within six (6) months of well completion, operators should work with BLM surface management specialists to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient well operation.

#### **2.6.1.3 *Caliche Removal***

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for operation or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

#### **2.6.1.4 *Reseeding Requirements***

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

#### **2.6.1.5 *Notice***

Upon completion of interim reclamation, the operator shall submit a Subsequent Report of Reclamation (Form 3160-5).

### **2.6.2 Final Reclamation**

#### **2.6.2.1 *Final Reclamation***

At final abandonment, well locations, facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

#### **2.6.2.2 *Earthwork***

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

### **2.6.2.3 Revegetation**

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

### **2.6.2.4 Contact BLM Prior to Abandonment**

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives.

### **2.6.2.5 Abandoned Well Marker**

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

## **2.7 Recreation**

### **2.7.1 RMP Guidelines**

To mitigate impacts associated with the drilling and production of oil and gas wells and associated infrastructure (roads, power lines, pipelines, etc.) in the SRMA, the guidelines in Appendix 4 as approved in the Carlsbad Resource Management Plan Amendment of 1997, page AP4-131 will be followed. This includes the standard mitigation for protecting ORV trails and camping areas.

### **2.7.2 Powerline and Pipeline recreation mitigation**

The pipeline shall be buried a minimum of 24 inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. During all phases of construction, open ditches shall have proper signage notifying trail users of potential hazards. Upon completion of construction, the road shall be returned to pre-construction condition with no bumps or dips. Power line poles will be spaced to avoid pole placement within trails and "two tracks." All vehicle and equipment operators will observe speed limits and practice responsible defensive driving habits.

## **2.8 Range**

### **2.8.1 Range Standard Practices**

Impacts to the ranching operation are reduced by the following standard practices such as utilizing existing surface disturbance, minimizing the well pad and access road total surface disturbance, utilizing steel tanks instead of reserve pits, minimizing vehicular use, placing parking and staging areas on caliche surfaced areas, reclaiming the areas not necessary for production, and quickly establishing vegetation on the reclaimed areas. Avoiding existing range improvement projects, or moving them, will prevent them from being damaged by the proposed action.

### **2.8.2 Livestock Watering Requirement**

Structures that provide water to livestock, such as windmills, pipelines, drinking troughs, and earthen reservoirs, will be avoided by moving the proposed action.

OR

Structures that provide water to livestock, such as windmills, pipelines, drinking troughs, and earthen reservoirs, will be moved a minimum of 200 meters away from the proposed action.

## **2.9 Visual Resources**

### **2.9.1 Reclamation Requirements**

After final abandonment and reclamation, the pad, road and associated infrastructure will be removed, reclaimed, recontoured and revegetated, thereby eliminating visual impacts.

### **2.9.2 Low Profile Facilities**

All permanent surface production facilities, including the well-drive control system, treatment, storage, power (except specifically approved electrical transmission lines and poles), or other permanent above-ground facilities shall be “low profile”, not to exceed \_\_\_\_ feet in height. Any exception to this Low Profile Facilities must be approved in writing by the BLM Authorized Officer prior to implementation.

## **2.10 Soil**

### **2.10.1 Slopes or Fragile Soils**

Surface disturbance will not be allowed on slopes over 30 percent. Exceptions will be considered for authorized mineral material extraction sites and designated OHV areas, for the installation of projects designed to enhance or protect renewable natural resources, or if a plan of operations and development which provides for adequate mitigation of impacts was approved by the Authorized Officer. Occupancy or use of fragile soils will be considered on a case-by-case basis.

### **2.10.2 Rights-Of-Way**

#### **2.10.2.1 Standard ROW Practices**

Impacts to soil resources will be reduced by following standard practices such as utilizing existing surface disturbance and quickly establishing vegetation on the disturbed areas.

#### **2.10.2.2 ROW Mitigation**

To further reduce impacts the following COAs will apply: minimizing the right-of-way width, no blading along the proposed route, minimizing vehicular use, and placing parking and staging areas on caliche surfaced areas.

Temporary soil erosion mitigation includes installing silt fences, diversion berms, or other soil erosion controls to slow water migration across disturbed areas during construction and reclamation.

### **2.10.3 Well Pads**

### **2.10.3.1 Well Pad Standard Practices**

Impacts to soil resources are reduced by the following standard practices which include: utilizing existing surface disturbance, minimizing the well pad and access road total surface disturbance, utilizing steel tanks instead of reserve pits, minimizing vehicular use, placing parking and staging areas on caliche surfaced areas, reclaiming the areas not necessary for production and quickly establishing vegetation on the reclaimed areas.

### **2.10.3.2 Well Pad Mitigation**

To further reduce impacts the following COAs will apply:

- Surface with caliche, interim reclamation, and caliche removal at time of reclamation.
- Stockpile topsoil to enhance reclamation.

OR

There is no measurable soil on this well pad to stockpile. No topsoil stockpile is required.

- Install silt fences, diversion berms, or other soil erosion controls to slow water migration across disturbed areas during construction and reclamation.

## **2.11 Wildlife**

### **2.11.1 Wildlife Habitat Projects**

#### **2.11.1.1 Raptor Nests and Heronries**

Surface disturbance will not be allowed within up to 200 meters of active heronries or by delaying activity for up to 120 days, or a combination of both. Raptor nests on special, natural habitat features, such as trees, large brush, cliff faces and escarpments, will be protected by not allowing surface disturbance within up to 200 meters of nests or by delaying activity for up to 90 days, or a combination of both.

Exceptions to this requirement for raptor nests will be considered if the nests expected to be disturbed are inactive, the proposed activity is of short duration (e.g. habitat enhancement projects, fences, pipelines), and will not result in continuing activity in proximity to the nest.

#### **2.11.1.2 Prairie Dog Towns**

Surface disturbance will not be allowed on public lands within known prairie dog towns or towns identified in the future. Exceptions to this requirement will be considered for maintaining existing structures or facilities. Prairie dog control will not be authorized on public lands, except in emergency situations involving public health.

### **2.11.2 Special Status Species**

#### **2.11.2.1 Prairie Chickens**

##### **2.11.2.1.1 LPC Timing Limitation**

Drilling will not be allowed in lesser Prairie Chicken habitat during the period of March 15 through June 15, each year. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except

between 3:00 a.m. and 9:00 a.m. The 3:00 a.m. to 9:00 a.m. restriction will not apply to normal, around-the-clock operations, which do not require a human presence during the period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise. Exceptions to these requirements will be considered for areas of no or low prairie chicken booming activity, or unoccupied habitat, including leks, as determined at the time of permitting, or in emergency situations.

#### **2.11.2.1.2 Ground Level Dry Hole Markers**

The BLM Carlsbad Field Office (CFO) Conditions of Approval (COA) Requires that ground level dry hole markers be placed on well within the Lesser Prairie Chicken habitat area. The dry hole markers will be to the following specifications:

- 1) An 8 inch X 8 inch steel plate 1/8 to 3/16 of an inch thick is to be placed on the old dry hole marker stand pipe 2 inches from ground level, in the Lesser Prairie Chicken habitat area.
- 2) Steel plate may be welded or bolted approximately 2 inches from ground level on the stand pipes. If plates are bolted to the stand pipe, the person installing the plate will be required to weld a pipe collar on the plate and place a minimum of two set screws/bolt on each collar. Aluminum data plates may be bolted with minimum ¼ inch bolt and locking nuts or self tapping fine threaded screws. A minimum of one in each corner is to be installed on each plate.
- 3) An 8 inch x 8 inch aluminum plate, which is 12 gauge or .080 sign material (1/8 inch aluminum plate may be used in place of the .080 plate) with the required information for that well stamped or engraved in a minimum 3/8 inch tall letter or number.
- 4) The following information will be stamped or engraved on the 8 inch X 8 inch aluminum plate in the following order.
  - a) First row: Operators name
  - b) Second row: Well name and number
  - c) Third row: Legal location to include ¼ ¼, Section, Township, and range. If the legal location cannot be placed on one row it can be split into two rows with the ¼ ¼ (example: 1980 FNL 1980 FWL) being on the top row.
  - d) Fourth row: Lease Number and API number.

NMOCD Order No. R-12965 also required the operator to notify NMOCD when this type of dry hole marker is used. This can be done on the subsequent report of abandonment which is submitted to the BLM after the well is plugged. State that a ground level dry hole marker was installed as required in the COA's from the BLM.

#### **2.11.2.2 Sand Dune Lizards**

Surface disturbance will not be allowed in documented occupied habitat areas, or within up to 100 meters of suitable habitat associated with occupied habitat areas identified through field review. An exception to this restriction will be considered when an on-site evaluation of habitat

extent, available species occurrence data, the proposed surface use, and proposed mitigations indicate the proposal will not adversely affect the local population.

## **2.12 Water Quality/Watershed**

### **2.12.1 Streams, Rivers and Floodplains**

Surface disturbance will not be allowed within up to 200 meters of the outer edge of 100-year floodplains, to protect the integrity of those floodplains. On a case-by-case basis, an exception to this requirement may be considered based on one or more of the criteria listed below. The first three criteria would not be applied in areas of identified critical or occupied habitat for federally listed threatened or endangered species.

- Additional development in areas with existing developments that have shown no adverse impacts to the riparian areas as determined by the Authorized Officer, following a case-by-case review at the time of permitting.
- Suitable off-site mitigation if habitat loss has been identified.
- An approved plan of operations ensures the protection of water or soil resources, or both.
- Installation of habitat, rangeland or recreation projects designed to enhance or protect renewable natural resources.

### **2.12.2 Playas and Alkali Lakes**

Surface disturbance will not be allowed within up to 200 meters of playas or alkali lakes. Waiver of this requirement will be considered on a case-by-case basis for projects designed to enhance or protect renewable natural resources. Mitigation could include: installing fencing; developing a supplemental water supply; planting trees and shrubs for shelter belts; conducting playa basin excavation; constructing erosion control structures or cross dikes; or by improving the habitat in another area.

### **2.12.3 Standard Practices to Protect Watersheds**

Standard practices or design features of the proposed project that minimize impacts to the watershed and water quality include: utilizing a closed loop system with no reserve pits, berming of the production facilities, utilizing existing surface disturbance, minimizing the well pad and access road total surface disturbance, minimizing vehicular use, surfacing parking and staging areas with caliche and reclaiming the areas not necessary for production and quickly reestablishing vegetation on the reclaimed areas.

### **2.12.4 Mitigation Measures to Protect Watersheds**

To further reduce impacts the following COAs will apply:

Surface disturbance will not be allowed (within x feet of playa; or describe pad restriction).

The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed.



Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. Stockpiling of topsoil is required. The top soil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control.

### **2.12.5 Surface Pipelines**

A leak detection plan will be submitted to the BLM Carlsbad Field Office for approval prior to pipeline installation. The method could incorporate gauges to detect pressure drops, situating values and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.

## **2.13 Vegetation**

### **2.13.1 Well pads**

#### ***2.13.1.1 Vegetation to Protect Vegetation from Well Pads***

Impacts to vegetation are reduced by the following standard practices which include: utilizing existing surface disturbance, minimizing the well pad and access road total surface disturbance, utilizing steel tanks instead of reserve pits, minimizing vehicular use, placing parking and staging areas on caliche surfaced areas, reclaiming the areas not necessary for production and quickly establishing vegetation on the reclaimed areas.

#### ***2.13.1.2 Mitigation to Protect Vegetation from Well Pads***

To further reduce impacts the following COAs will apply: Interim reclamation and caliche removal at time of reclamation.

### **2.13.2 Rights-Of-Way**

#### ***2.13.2.1 Standard Practices to Protect Vegetation from ROWs***

Impacts to vegetation will also be reduced by following standard practices such as utilizing existing surface disturbance and quickly establishing vegetation on the disturbed areas.

#### ***2.13.2.2 Mitigation to Protect Vegetation from ROWs***

To further reduce impacts the following COAs will apply: Minimizing the right-of-way width, No blading along the proposed route, Minimizing vehicular use, Placing parking and staging areas on caliche surfaced areas.

## **2.14 Noxious Weeds**

### **2.14.1 Mitigation for Weeds**

To further reduce impacts the following COAs will apply:

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist,

which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

## **2.14.2 African Rue Standard Stipulations**

### **2.14.2.1 African Rue (*Peganum harmala*)**

The standard stipulation for the BLM Carlsbad Field Office states the operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA, and BLM requirements and policies.

### **2.14.2.2 Spraying**

The spraying of African Rue must be completed by a licensed or certified applicator. In order to attempt to kill or remove African Rue the proper mix of chemical is needed. The mix consists of 1% Arsenal (Imazapyr) and 1% Roundup (Glyphosate). African rue must be sprayed two weeks prior to any dirt working activities or disturbances to the site being sprayed. This will allow proper time to ensure the plants mortality. After the two week period the operator or necessary parties must contact the Carlsbad Field Office to inspect the effectiveness of the application treatment to the plant species. No ground disturbing activities can take place until the inspection by the authorized officer is complete. The operator may contact the Carlsbad Field Office at (505) 234-5972.

### **2.14.2.3 African Rue Management Practices**

In addition to spraying for African Rue good management practices must be followed. All equipment must be washed off using a power washer in a designated containment area. The containment area needs to be bermed to allow for containment of the seed to prevent it from entering any open areas of the nearby landscape. The containment area needs to be excavated near or adjacent to the well pad at a depth of three feet and just large enough to get equipment inside it to be washed off. This will allow all seeds to be in a centrally located area that can be treated at a later date if the need arises.

## **2.15 Archaeology**

### **2.15.1 Archaeological, Paleontological and Historical Sites**

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required

to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

### **2.15.2 Historic Properties**

Historic properties in the vicinity of this project are protected by federal law. In order to ensure that they are not damaged or destroyed by construction activities, the project proponent and construction supervisors shall ensure that the following stipulations are implemented.

#### **2.15.2.1 Professional Archaeological Monitoring**

Contact your project archaeologist, or BLM's Cultural Resources Section at (575) 234-2228, 5917, 2236, or 5967, for assistance.

- A. These stipulations must be given to your monitor at least 5 days prior to the start of construction.
- B. No construction, including vegetation removal or other site prep may begin prior to the arrival of the monitor.

#### **2.15.2.2 Monitor Duties**

The archaeological monitor shall:

- A. Observe all ground-disturbing activities within 100 feet of cultural site
- B. Ensure that all reroutes are adhered to avoid cultural site
- C. Submit a brief monitoring report within 30 days of completion of monitoring

### **2.15.3 Site Protection and Employee Education**

It is the responsibility of the project proponent and his construction supervisor to inform all employees and subcontractors that cultural and archaeological sites are to be avoided by all personnel, vehicles, and equipment; and that it is illegal to collect, damage, or disturb cultural resources on Public Lands.

## **2.16 Welding**

The following precautions will be taken for all arc and/or gas welding operations, and operations where oxy-acetylene cutting and brazing are done in a wildland fire environment.

1. At the work site, clear away all flammable vegetation down to mineral soil for a minimum radius of 6 feet around where the welding/cutting will take place. This includes grasses and other vegetative material.
2. While conducting the welding/cutting operations, the operator will have within 25 feet of the welding/cutting site:
  - Five (5) gallons of water and/or;
  - A five (5) pound multi-purpose dry fire extinguisher and a round point shovel.

3. After welding/cutting activities are completed, a routine return to the site will be required within 1 hour after the completion of the activity to check for any potential hot material that may start a wildland fire.
4. Operators and contractors are reminded that they may be held responsible for any wildland fire that starts from welding/cutting operations. This includes all cost for suppressing any wildland fire that starts from these activities.

## **2.17 Seed Mixtures**

### **2.17.1 Seed Requirements**

The holder shall seed all disturbed areas with the appropriate seed mixture found in Section 3 of this appendix. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

### **2.17.2 Seeding Methods**

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (small/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

## **2.18 Drilling**

### **2.18.1 Waste Material And Fluids**

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

### **3 Seed Mixtures Currently Used for Ecological Sites**

BLM SERIAL #:

COMPANY REFERENCE:

### 3.1 Seed Mixture 1, for Loamy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (small/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed\* per acre:

<u>Species</u>	<u>lb/acre</u>
Plains lovegrass ( <i>Eragrostis intermedia</i> )	0.5
Sand dropseed ( <i>Sporobolus cryptandrus</i> )	1.0
Sideoats grama ( <i>Bouteloua curtipendula</i> )	5.0
Plains bristlegrass ( <i>Setaria macrostachya</i> )	2.0

\*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed

BLM Serial #:

Company Reference:

### 3.2 Seed Mixture for LPC Sand/Shinnery Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed\* per acre:

<u>Species</u>	<u>lb/acre</u>
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

\*Pounds of pure live seed: Pounds of seed x percent purity x percent germination = pounds pure live seed

BLM SERIAL #:

COMPANY REFERENCE:

### 3.3 Seed Mixture 2, for Sandy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law (s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed\* per acre:

<u>Species</u>	<u>lb/acre</u>
Sand dropseed ( <i>Sporobolus cryptandrus</i> )	1.0
Sand love grass ( <i>Eragrostis trichodes</i> )	1.0
Plains bristlegrass ( <i>Setaria macrostachya</i> )	2.0

\*Pounds of pure live seed: Pounds of seed x percent purity x percent germination = pounds pure live seed



BLM SERIAL #:

COMPANY REFERENCE:

### 3.4 Seed Mixture 3, for Shallow Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed\* per acre:

<u>Species</u>	<u>lb/acre</u>
Plains Bristlegrass ( <i>Setaria magrostachya</i> )	1.0
Green Spangletop ( <i>Leptochloa dubia</i> )	2.0
Side oats Grama ( <i>Bouteloua curtipendula</i> )	5.0

\*Pounds of pure live seed: Pounds of seed x percent purity x percent germination = pounds pure live seed

BLM SERIAL #:

COMPANY REFERENCE:

### 3.5 Seed Mixture 4, for Gypsum Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed\* per acre:

<u>Species</u>	<u>lb/acre</u>
Alkali Sacaton ( <i>Sporobolus airoides</i> )	1.0
DWS Four-wing saltbush ( <i>Atriplex canescens</i> ) (DWS: DeWinged Seed)	5.0

\*Pounds of pure live seed: Pounds of seed x percent purity x percent germination = pounds pure live seed